

# RWorksheet\_4.Rmd

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2023-10-26

#1. #A.

*#This will provide you with summary statistics for the shoe size and height variables.*

```
data<- data.frame(  
  Shoe_Size = c(6.5,9.0,8.5,8.5,10.5,7.0,9.5,9.0,13.0,7.5,10.5,8.5,12.0,10.5,13.0,11.5,8.5,5.0,10.0,6.5  
  Height = c(66.0,68.0,64.5,65.0,70.0,64.0,70.0,71.0,72.0,64.0, 74.5, 67.0,71.0,71.0,77.0,72.0, 59.0,62  
)  
data
```

```
##      Shoe_Size Height  
## 1          6.5   66.0  
## 2          9.0   68.0  
## 3          8.5   64.5  
## 4          8.5   65.0  
## 5         10.5   70.0  
## 6          7.0   64.0  
## 7          9.5   70.0  
## 8          9.0   71.0  
## 9         13.0   72.0  
## 10         7.5   64.0  
## 11        10.5   74.5  
## 12         8.5   67.0  
## 13        12.0   71.0  
## 14        10.5   71.0  
## 15        13.0   77.0  
## 16        11.5   72.0  
## 17         8.5   59.0  
## 18         5.0   62.0  
## 19        10.0   72.0  
## 20         6.5   66.0  
## 21         7.5   64.0  
## 22         8.5   67.0  
## 23        10.5   73.0  
## 24         8.5   69.0  
## 25        10.5   72.0  
## 26        11.0   70.0  
## 27         9.0   69.0  
## 28        13.0   70.0
```

#B.

```
Gender = c("F","F","F","F","M", "F","F","F", "M", "F","M","F","M","M", "M","M", "F","F","M","F","F","M"  
males <- subset(data, Gender == "M")  
males
```

```
##      Shoe_Size Height
## 5         10.5   70.0
## 9         13.0   72.0
## 11        10.5   74.5
## 13        12.0   71.0
## 14        10.5   71.0
## 15        13.0   77.0
## 16        11.5   72.0
## 19        10.0   72.0
## 22         8.5   67.0
## 23        10.5   73.0
## 25        10.5   72.0
## 26        11.0   70.0
## 27         9.0   69.0
## 28        13.0   70.0
```

```
females <- subset(data, Gender == "F")
females
```

```
##      Shoe_Size Height
## 1         6.5   66.0
## 2         9.0   68.0
## 3         8.5   64.5
## 4         8.5   65.0
## 6         7.0   64.0
## 7         9.5   70.0
## 8         9.0   71.0
## 10        7.5   64.0
## 12        8.5   67.0
## 17        8.5   59.0
## 18        5.0   62.0
## 20        6.5   66.0
## 21        7.5   64.0
## 24        8.5   69.0
```

#C.

```
mean(data$Shoe_Size)
```

```
## [1] 9.410714
```

```
mean(data$Height)
```

```
## [1] 68.57143
```

#D.

```
#Yes, because I observe that the taller you are the bigger shoe size you would have.
```

#2.

```
factor_months_vector <- factor(c("March", "April", "January", "November", "January", "September", "October", "January", "February", "March", "April", "May", "June", "July", "August", "September", "October", "November", "December", "January", "February", "March", "April", "May", "June", "July", "August", "September", "October", "November", "December"))
factor_months_vector
```

```
## [1] March      April      January    November   January    September  October
## [8] September  November   August     January    November   November   February
## [15] May        August     July       December   August     August     September
## [22] November   February   April
## 11 Levels: April August December February January July March May ... September
```

#3

```
summary(factor_months_vector)
```

```
##      April      August  December  February  January      July      March      May
##          2          4          1          2          3          1          1          1
## November  October September
##          5          1          3
```

*#For the factor\_months\_vector, you will get a count of each unique value, which tells you how many time*

#4.

```
factor_data <- c("East", "West", "North")
frequency <- c(1,4,3)
```

```
new_order_data <- factor(factor_data, levels = c("East", "West", "North"))
new_order_data
```

```
## [1] East West North
## Levels: East West North
```

#5.

```
student_table <- read.table(file = 'import_march.csv', header = TRUE, sep = ',')
student_table
```

```
## Students Strategy.1 Strategy.2 Strategy.3
## 1      Male          8          10          8
## 2              4          8          6
## 3              0          6          4
## 4      Female         14          4         15
## 5              10          2         12
## 6              6          0          9
```

#6.

```
random_number <- sample(1:50, 1)
```

```
cat("The chosen number is:", random_number, "\n")
```

```
## The chosen number is: 11
```

```
if (random_number == 20) {
  cat("TRUE\n")
} else if (random_number < 1 || random_number > 50) {
  cat("The number selected is beyond the range of 1 to 50\n")
} else {
  cat(random_number, "\n")
}
```

```
## 11
```

#7.

```
calculate_min_bills <- function(price_of_snack) {
  bill_denominations <- c(1000, 500, 200, 100, 50)
  total_bills <- 0

  for (bill in bill_denominations) {
    num_bills_needed <- price_of_snack %/% bill
  }
}
```

```

    price_of_snack <- price_of_snack %% bill
    total_bills <- total_bills + num_bills_needed
  }

  cat("Minimum number of bills needed to purchase the snack:", total_bills, "\n")
}

price_of_snack <- 1350
calculate_min_bills(price_of_snack)

```

## Minimum number of bills needed to purchase the snack: 4

#8. #A.

```

students <- data.frame(
  Name = c("Annie" , "Thea", "Steve", "Hanna"),
  Grade1 = c(85,65,75,95),
  Grade2 = c(65,75,55,75),
  Grade3 = c(85,90,80,100),
  Grade4 = c(100,90,85,90)
)
students

```

```

##      Name Grade1 Grade2 Grade3 Grade4
## 1 Annie      85      65      85      100
## 2 Thea       65      75      90      90
## 3 Steve      75      55      80      85
## 4 Hanna      95      75     100      90

```

#B.

```

total_average <- 0

count <- 0

for (i in 1:nrow(students)) {
  average <- (students$Grade1[i] + students$Grade2[i] + students$Grade3[i] + students$Grade4[i]) / 4
  if (students$Grade4[i] > 90) {
    cat(students$Name[i], "'s average grade this semester is", average, ".\n")
    total_average <- total_average + average
    count <- count + 1
  }
}

```

## Annie 's average grade this semester is 83.75 .

```

if (count > 0) {
  overall_average <- total_average / count
  cat("The overall average for high-achieving students is", overall_average, ".\n")
} else {
  cat("No high-achieving students found.\n")
}

```

## The overall average for high-achieving students is 83.75 .

#C.

```
test1_average <- sum(students$Grade1) / nrow(students)
test2_average <- sum(students$Grade2) / nrow(students)
test3_average <- sum(students$Grade3) / nrow(students)
test4_average <- sum(students$Grade4) / nrow(students)
```

```
if (test1_average < 80) {
  cat("The 1st test was difficult.\n")
}
if (test2_average < 80) {
  cat("The 2nd test was difficult.\n")
}
```

```
## The 2nd test was difficult.
```

```
if (test3_average < 80) {
  cat("The 3rd test was difficult.\n")
}
if (test4_average < 80) {
  cat("The 4th test was difficult.\n")
}
```

```
#D.
```

```
for (i in 1:nrow(students)) {
  highest_grade <- students$Grade1[i]
  if (students$Grade2[i] > highest_grade) {
    highest_grade <- students$Grade2[i]
  }
  if (students$Grade3[i] > highest_grade) {
    highest_grade <- students$Grade3[i]
  }
  if (students$Grade4[i] > highest_grade) {
    highest_grade <- students$Grade4[i]
  }
  if (highest_grade > 90) {
    cat(students$Name[i], "'s highest grade this semester is", highest_grade, "\n")
  }
}
```

```
## Annie 's highest grade this semester is 100
## Hanna 's highest grade this semester is 100
```